MULTIMEDIA **UNIVERSITY**

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FINAL EXAMINATION

TRIMESTER 2, 2019/2020

TDB2121 – DATABASE DESIGN AND MANAGEMENT
(All sections / Groups)

3 MARCH 2020
9.00 a.m. – 11.00 a.m.
(2 hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of **5 QUESTIONS** only.
2. Attempt all questions.
3. You are allowed to use calculators in this examination.
4. Please print all your answers in the Answer Booklet provided.

QUESTION 1 and 2 are based on the following scenario.

SCENARIO
ZenOne is a famous online and offline fashion store for men and women. Mr. Georgia is the director. The base of this store is at Miri Sarawak (Miri, ID=1001). However, the business has expanded to these territories: Kuala Lumpur (KL, ID=1002), Johor Bahru (JB, ID=1003) and Penang (PEN, ID=1004). Currently, ZenOne has a huge centralized database server in Miri. Here is part of the relational schema:

- Employee(**EmpID**, Gender, Contact, Email, Position, IC, DOB)
  Records: 1000 records

- SalesAgent(**SalesID**, TerritoryID, Sales Quota, Bonus, Commission, EmpID)
  Records: 100 records

- Territory   (**TerritoryID**,   Name,   SalesLastYear,   CostLastYear, SalesCurrentYear, CostCurrentYear)
  Records: 10 records

- FashionProduct   (**FashionID**,   FashionBrand,   FashionQuantity, FashionCategory, FashionPrice)
  Records: 1500 records

- OrderDetails (**FashionID**, **OrderID**, OrderQty, Price,)
  Records: 150000 records

- Order (**OrderID**, OrderDate, OrderTime, OrderStatus, PaymentMethod, PaymentStatus, PaidAmount, DueAmount, CusID, SalesID)
  Records: 150000 records

- Customer (**CusID**, CusName, CusContact, AddID)
  Records: 5000 records

- Location   (**AddID**,   AddStreet,   AddCity   AddRegion,   TerritoryID, AddPostalCode, AddCountry)
  Records: 5000 records

- Shipping (**ShipID**, ShipDate, ShipPrice, ShipType, OrderID, AddID)
  Records: 150000 records

- Time (**TimeID**, Time_Day, Time_Week, Time_Month, Time_Year)

QUESTION 1

Making fast and accurate decision is crucial in the business world. Thus, Mr. Georgia has discussed with the other stakeholders of the company and decided to implement data warehouse in Miri, i.e. the headquarter. Order is one of the fact table to support the decision. It is used to trace the records of customer, fashion products, shipping location, and order time. The managers are interesting to know information such as: total order in number, total sales payment and total due amount.

(a) In your opinion, what dimensions are needed to support the Order Fact Table?

[1 mark]

(b) It is common to aggregate the orders according to the location. In your opinion, what attribute hierarchy is suitable for location?

[1 mark]

(c) What are the new attributes that you need to include in Order Fact Table?   [1 mark]

(d) Sketch the star schema of the Order Fact Table.   [7 marks]

QUESTION 2

The number of customers is growing and the database server is having a tough time in accessing the data and processing the query. Mr. Georgia is thinking about distributed database management system (DDBMS).

(a) How can the DDBMS help ZenOne? Justify with FIVE reasons.   [5 marks]

(b) With the implementation of DDBMS, some tables used to be applied fragmentation. Sales agent and customer information need to be distributed according to the territory. Identify the suitable type of fragmentation to apply and sketch out the fragment with suitable criteria.

[5 marks]

Continued.......

QUESTION 3

(a) Describe the TWO given business rules by using Object Oriented Representative Diagram.
   • Each shipped item is sent/delivered from a retail centre. Each retail centre delivers many shipped items.
   • Each shipped item is delivered via many transportation events. Each transportation event can deliver many shipped items.

   You need to include two instances in each object.

[6 marks]

(b) Briefly describe TWO advantages of cloud computing.   [2 marks]

(c) Based on the following issues, identify the types of threat in database security:
   (i) The data of employees are leaking out.
   (ii) Data corruption due to power surge.

[2 marks]

Continued.......

QUESTION 4 and QUESTION 5 are based on the following ERD diagram.
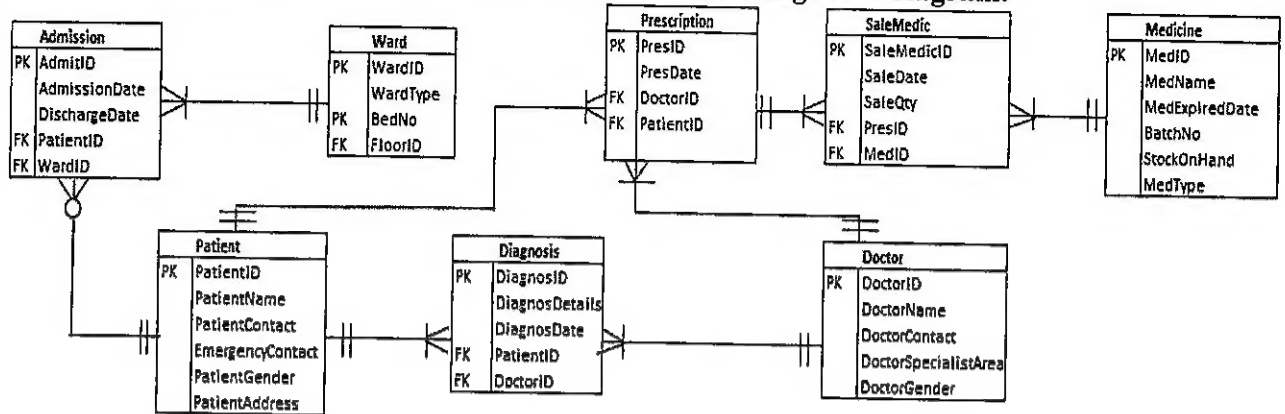

Figure 1. ERD

Assume the date format is YYYY-MM-DD.

QUESTION 4

(a) Create Table SaleMedic with the following conditions:
- Make sure no similar table is in the database
- SaleMedicID is automatically increase from 2000.
- All the attributes contain no null values.
- Sample input is shown in the following table:

SaleMedicID	SaleDate	SaleQty	PresID	MedID
2001	2019-12-11	2	P1452111	MED542236589

[4 marks]

(b) Create query to list the total quantity of each medicine that is consumed by customers on 2020-01-01. The listing includes the medicine ID, medicine name and total quantity that is more than 5.
[4 marks]

(c) Modify the structure of Table Doctor by adding a new column, i.e. username.

[2 marks]

Continued.......

QUESTION 5

(a) Create a stored procedure which receives WardID as the input parameter and display all the patient name in the ward. Ward ID is having 5 characters.   [4 marks]

(b) Write a trigger that will decrease the StockOnHand in Table Medicine by deducting the SaleQty in Table SaleMedic when a new record is inserted into SaleMedic.

      [5 marks]

(c) Write the command that invokes the stored procedure 'ListAdmit' which receive the patient ID P1234568 as parameter.   [1 mark]

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